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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,392	04/20/2006	Rifat Ata Mustafa Hikmet	NL031234	2414

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BRIARCLIFF MANOR, NY 10510

EXAMINER

MOONEY, MICHAEL P

ART UNIT	PAPER NUMBER
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2883

MAIL DATE	DELIVERY MODE
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10/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,392

Applicant(s)

HIKMET, RIFAT ATA MUSTAFA

Examiner

Michael P. Mooney

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/20/06</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102b as being anticipated by Nishioka (20020181126).

Nishioka teaches a polarization independent phase modulator for light, comprising: two transparent substrates (fig. 12; paragraph 0126); and a layer (104) of chiral liquid crystal mixture, between said substrates (fig. 12; paragraph 0126); wherein said chiral liquid crystal mixture is oriented in a helix oriented ground state (paragraphs 0136-0135); is controllable between said ground state and a tilted state by means of an electric field (e.g., figs. 12-13); has an effective refractive index which depends on the state of said liquid crystal mixture (e.g., paragraphs 0106-0135); and has a pitch that is sufficiently small (e.g., paragraphs 0119-0135) to make the value of the refractive index substantially independent of the polarization of the light (figs. 12-13; paragraphs 0106-0135). Thus claim 1 is met.

Nishioka teaches light having a wavelength longer than a predetermined wavelength λ , wherein said pitch is smaller than λ/n , n being the larger of the extraordinary refractive index and the ordinary refractive index of the liquid crystal

Art Unit: 2883

mixture in a uniaxially oriented phase (e.g., paragraphs 0119-0135). Thus claim 2 is met.

Nishioka teaches polarization independent phase modulator (100) according to claim 2, wherein said predetermined wavelength λ is 400 nm or, preferably, 350 nm (e.g., paragraphs 0119-0135, 0164-0171). Thus claim 3 is met.

Nishioka teaches wherein said pitch is smaller than 350 nm, and preferably smaller than 250 nm (e.g., paragraphs 0119-0135, 0164-0171). Thus claim 4 is met.

Nishioka teaches wherein said chiral liquid crystal mixture comprises liquid crystal molecules which are dispersed in a network material (e.g., paragraphs 0217-0218). Thus claim 5 is met.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (20020181126).

Nishioka teaches a polarization independent phase modulator for light, comprising: two transparent substrates (fig. 12; paragraph 0126); and a layer (104) of chiral liquid crystal mixture, between said substrates (fig. 12; paragraph 0126); wherein said chiral liquid crystal mixture is oriented in a helix oriented ground state (paragraphs 0136-0135); is controllable between said ground state and a tilted state by means of an electric field (e.g., figs. 12-13); has an effective refractive index which depends on the state of said liquid crystal mixture (e.g., paragraphs 0106-0135); and has a pitch that is sufficiently small (e.g., paragraphs 0119-0135) to make the value of the refractive index substantially independent of the polarization of the light (figs. 12-13; paragraphs 0106-0135). Thus claim 1 is met.

Nishioka teaches light having a wavelength longer than a predetermined wavelength λ , wherein said pitch is smaller than λ/n , n being the larger of the extraordinary refractive index and the ordinary refractive index of the liquid crystal mixture in a uniaxially oriented phase (e.g., paragraphs 0119-0135). Thus claim 2 is met.

Nishioka teaches polarization independent phase modulator (100) according to claim 2, wherein said predetermined wavelength λ is 400 nm or, preferably, 350 nm (e.g., paragraphs 0119-0135, 0164-0171). Thus claim 3 is met.

Art Unit: 2883

Nishioka teaches wherein said pitch is smaller than 350 nm, and preferably smaller than 250 nm (e.g., paragraphs 0119-0135, 0164-0171). Thus claim 4 is met.

Nishioka teaches wherein said chiral liquid crystal mixture comprises liquid crystal molecules which are dispersed in a network material (e.g., paragraphs 0217-0218). Thus claim 5 is met.

Nishioka teaches wherein said network material is a anisotropic polymer network (e.g., paragraphs 0217-0218). Although Nishioka does not explicitly state "wherein said dispersed mixture consists of 10-60 percent by weight linear polymer molecules which are linked by 0.5-1 percent by weight cross-linking molecules" it would have been obvious to do so because it is conventionally known to use a dispersed mixture that consists of 10-60 percent by weight linear polymer molecules which are linked by 0.5-1 percent by weight cross-linking molecules to obtain a working granular arrangement that is within art recognized constraints (paragraphs 0217-0218).

Thus claim 6 is rejected.

Although Nishioka does not explicitly state "wherein said network material has a laterally varying concentration such that lateral variations of said tilted state and thus of said polarization independent refractive index is provided upon application of a uniform electric field across said layer of liquid crystal mixture" it would have been obvious to do so because it is conventionally known vary the concentration for the purpose of controlling the wave range reflected/transmitted (paragraphs 0217-0218). Thus claim 7 is rejected.

Nishioka teaches the remaining claims 8-16 are rendered obvious by the reasons and references given above and/or conventionally known well-established principles in the art. Thus claims 8-16 are rejected

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Mooney whose telephone number is 571-272-2422. The examiner can normally be reached during weekdays, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 2883

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael P. Mooney
Examiner
Art Unit 2883



Frank G. Font
Supervisory Patent Examiner
Art Unit 2883

FGF/mpm
9/25/07